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A META-ANALYTIC STUDY OF NOMOLOGICAL RELATIONSHIPS
INVOLVING WORK PERFORMANCE AND JOB ATTITUDES

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A Meta-analytic Study of Nomological Relationships

Involving Work Performance and Job Attitudes

Meta-analysis was used to provide an integrative assessment of nomological relationships involving work performance, job satisfaction, job involvement, organizational commitment, and turnover intentions. First, the strength and consistency of pairwise relationships were assessed, followed by moderator analyses to account for variability in the strength of the relationships studied. Significant moderating effects of sample characteristics (e.g., professional versus non-professional) and measure characteristics were found. A survey of expert scholars was undertaken to assess the degree of consensus regarding the path structure of relationships and to determine the most likely ordering of relationships. The results of the survey indicated minimal agreement regarding path structure. Based on theory and the survey of experts, three alternative path models were formulated and tested using weighted mean correlations from the meta-analysis. When paths lacking in substantive significance were trimmed from the models, two of the alternative models converged to provide very similar representations of path relationships and identically good fits to the data. Work performance was modestly related to job satisfaction, but not to other job attitudes. Job satisfaction was primarily an antecedent rather than a consequence of organizational commitment and also had a direct effect on turnover intentions. Organizational commitment did not completely mediate the effects of job satisfaction on turnover intentions. The aggregated data were inconclusive with respect to whether work performance and job involvement were primarily antecedents or consequences of job satisfaction.

A Meta-analytic Study of Nomological Relationships Involving Work Performance and Job Attitudes

Relationships involving work performance and job attitudes have been among the most frequently studied in organizational behavior research. Yet despite a vast amount of research effort, important questions regarding nomological relationships among work performance and various job attitudes remain unanswered (Mathieu & Zajac, 1990). Although several meta-analyses (e.g., Petty, McGee, & Cavender [1984]; Iaffaldano & Muchinsky [1985]; Mathieu & Zajac [1990]; Bycio [1992]) have considered pairwise relationships involving work performance and job attitudes, few have considered the path structure of relationships involving these constructs. The great amount of research effort devoted to studying these work outcomes reflects their substantive importance in theoretical models of work behavior and managerial practice. To better understand their interrelationships, we use meta-analysis as a theory-testing tool to assess path models of nomological relationships among work performance and job attitudes (Schmidt, 1992).

Empirical evidence to date is inconclusive with respect to important questions such as whether work performance is significantly related to job attitude constructs such as job satisfaction, job involvement, organizational commitment, and turnover intentions (cf. Lee & Mowday, 1987; Shore & Martin, 1989); whether job satisfaction is primarily an antecedent or a consequence of organizational commitment (cf. Williams & Hazer, 1986; Farkas & Tetrick, 1989); and whether job satisfaction is directly related to turnover intentions or whether its effects are indirect, mediated by organizational commitment (cf. Williams & Hazer, 1986; Farkas & Tetrick, 1989). Moreover, to our knowledge no prior meta-analytic assessment has been made of relationships between job involvement and its correlates or of

how job involvement is causally related to work performance and other job attitudes. Also, prior research has not fully considered the effects of study design choices, such as sample characteristics and use of different measures, on the strength of relationships among these constructs.

The objectives of this study are to 1) use a large pool of empirical study effects to assess nomological relationships involving work performance, job satisfaction, job involvement, organizational commitment, and turnover intentions; 2) provide a summary assessment of the strength and consistency of pairwise relationships among these constructs, some of which (i.e., job involvement) have not previously been considered in a meta-analysis; 3) assess the generalizability of relationships across study contexts and types of measures; 4) assess the impact of methodological decisions made by researchers on the strength of relationships; and 5) draw implications for theory, future research, and management practice regarding the studied relationships.

Constructs, Research Issues, and Basic Model

The present study focuses on the interrelationships involving work performance, job satisfaction, job involvement, organizational commitment, and turnover intentions. To delimit the scope of the study and make a comprehensive quantitative assessment practicable, antecedents of work performance and job attitudes (a vast category of variables) are not considered. As indicated, a number of significant questions remain regarding relationships among these constructs. Answering these questions is important for, among other things, an accurate understanding of how job attitudes and turnover intentions are formed. The following sections define the constructs and briefly review major unresolved research issues.

Work Performance

Work performance is defined conceptually as employees' overall effectiveness in carrying out job responsibilities (Landy & Farr, 1983). Operationalizations of work performance vary widely across the research reviewed here and include objective measures (e.g., frequency counts of work output, sales volumes or commissions, etc.), manager ratings, self ratings, and peer ratings. Despite the wide variation in operationalization of work performance, however, previous research has indicated considerable consistency in the nature and strength of relationships between work performance and job attitudes (e.g., Vroom, 1964; Iaffaldano & Muchinsky, 1985). Work performance has tended to have very modest correlations with job satisfaction (Vroom, 1964; Iaffaldano & Muchinsky, 1985) and organizational commitment (Mathieu & Zajac, 1990).

Despite such modest relationships, research findings have been inconsistent regarding their statistical significance and hence the conclusions that have been drawn. Lee & Mowday (1987) found work performance significantly related to job satisfaction, job involvement, and organizational commitment, whereas others (e.g., Behrman & Perreault, 1984; Shore & Martin, 1989) did not find significant relationships and concluded that none existed. Aggregating the accumulated empirical evidence permits an estimation of the true effect sizes in the population and overcomes the problems and limitations inherent in statistical significance testing (Schmidt, 1992).

Several studies (e.g., Behrman & Perreault, 1984; Dubinsky & Hartley, 1986) found that work performance was not significantly related to job satisfaction when the effects of antecedent variables (e.g., role perceptions) were controlled. These studies suggest that the

modest positive association between performance and satisfaction may be spurious and attributable to relationships with common antecedents. A recent meta-analysis of research conducted in salesforce contexts (Brown & Peterson, 1993, p. 73) concluded that work performance was a "'terminal value' ... or an end in itself" but had no substantively important causal relationships with job attitudes. Hence, an important research question concerns whether work performance is significantly related to job attitude constructs or whether it represents a "terminal value" (Cherrington, 1980).

Despite the fact that several studies have suggested that the modest relationship between performance and satisfaction may be spurious and related to common antecedent variables, other research (e.g., Wanous, 1974; Sheridan & Slocum, 1975) has suggested that performance is causally antecedent to satisfaction. With respect to other job attitudes, consensus has not been established regarding whether job performance is primarily an antecedent or a consequence. While some research (e.g., Hall, 1976; Stumpf, 1981; Brown, Cron & Leigh, 1993) has considered job performance to be primarily an antecedent of job attitudes, other research (e.g., Mathieu & Zajac, 1990) has considered performance primarily as a consequence; still other research (e.g., Steers & Mowday, 1981) has considered job performance as both an antecedent and consequence of job attitudes. However, whatever causal priority has been posited, previous empirical and meta-analytic research has found work performance very modestly or not at all related to other job attitudes (e.g., Mathieu & Zajac, 1990; Brown & Peterson, 1993). Several studies have found the effects of work performance on job attitudes to be mediated by job satisfaction (e.g., Stumpf, 1981; Brown, Cron, & Leigh, 1993).

Job Satisfaction

Job satisfaction is defined conceptually as "a pleasurable or positive emotional state resulting from appraisal of one's job or job experiences" (Locke, 1976, p. 1300). The construct has been operationalized as a global evaluation (e.g., Quinn & Staines, 1979), separated into intrinsic and extrinsic components (e.g., Porter & Lawler, 1968; Hackman & Oldham, 1975), or treated as satisfaction with various job facets (e.g., Smith, Kendall, & Hulin, 1969). The present study considers the potential moderating effects these different measures have on relationships involving job satisfaction to assess the impact of methodological choices made by researchers.

Some empirical research (e.g., Hall [1976], Stumpf [1981], and Brown, Cron, & Leigh [1993]) has suggested that job involvement is primarily a consequence rather than an antecedent of job satisfaction. These findings suggest that the more satisfied one is with a job, the more likely one is to identify psychologically with it and to associate work performance with the self-concept.

A much debated question concerns whether job satisfaction is primarily an antecedent or a consequence of organizational commitment (Mathieu & Zajac, 1990). The prevalent theoretical view holds that organizational commitment is a more stable and enduring attitude than job satisfaction, which is subject to short-term fluctuations in affective reactions to job conditions (Mowday, Porter, & Steers, 1982). According to this view, organizational commitment is a consequence of job satisfaction. An opposing view, based on self-perception theory (Bem, 1972), regards organizational commitment as a behavioral construct

and holds that individuals infer their job satisfaction from their behavioral commitment to the organization (e.g., Salancik, 1977; Bateman & Strasser, 1984).

Empirical evidence is inconclusive regarding the question of causal ordering of job satisfaction relative to organizational commitment. Using a longitudinal study design, Bateman and Strasser (1984) found evidence supporting organizational commitment as the antecedent, whereas Williams and Hazer (1986) and Meyer and Allen (1988; also based on a longitudinal study design) concluded that job satisfaction was the antecedent. Farkas and Tetrick (1989) found mixed evidence in a three-wave longitudinal study and suggested that the causal priority of the two may change over time.

The theoretical and empirical evidence is also inconsistent regarding whether job satisfaction exerts a direct effect on turnover intentions or whether its effects are primarily indirect, mediated by organizational commitment. The Bluedorn (1982) turnover model, for example, posits that organizational commitment mediates the effect of job satisfaction on turnover intentions, and Williams and Hazer (1986) provided supporting empirical evidence. On the other hand, several other empirical studies (e.g., Hom, Katerberg, & Hulin, 1979; Peters, Bhagat, & O'Connor, 1981; Jackofsky & Slocum, 1987; Farkas & Tetrick, 1989; Rosin & Korabik, 1991) and one meta-analysis (Tett & Meyer, 1993) have found significant direct effects of satisfaction on turnover intentions.

The view that organizational commitment completely mediates the effect of job satisfaction on turnover intentions implies that attitudes leading to intentions to leave the organization have only the organization (rather than the job itself, supervisors, coworkers, etc.) as attitude object. The perspective that job satisfaction directly impacts turnover

intentions, on the other hand, suggests that attitudes toward the work itself and other facets of the job that are not necessarily specific to the organization may also impact turnover intentions.

Job Involvement

The definition and conceptualization of job involvement has been a source of confusion and debate in prior research (Rabinowitz & Hall, 1977; Kanungo, 1982). One conceptualization centers on the construct of ego involvement and treats job involvement in terms of performance - self esteem contingency (i.e., how one feels about oneself depends on how one performs on the job). In this conceptualization, the job and job performance are central to the individual's self concept (Lodahl & Kejner, 1965; Rabinowitz & Hall, 1977). A second conceptualization defines involvement as a cognitive or belief state of psychological identification (Kanungo, 1982).

The original conceptual and operational definition of Lodahl and Kejner (1965) did not distinguish clearly between these two views of job involvement. Given the multidimensional nature of the Lodahl and Kejner measure (Rabinowitz & Hall, 1977), many subsequent researchers have employed scales comprised of various subsets of items from the original scale. Often this is done with scant regard for what facets of the conceptual definition the items were designed to reflect (Rabinowitz & Hall, 1977). In an effort to reduce the conceptual confusion, Kanungo (1982) developed a scale that focused on the psychological identification definition of job involvement. Most studies have used the Lodahl and Kejner (1965) measure, with the Kanungo (1982) measure being the second most commonly used scale.

No summary assessment of the strength and consistency of pairwise relationships involving job involvement has previously been made. Moreover, despite a large volume of research on job involvement (e.g., Rabinowitz & Hall, 1977), relatively little is known about its position in path analytic structures with related constructs. The present study assesses and attempts to clarify these relationships.

Considerable research has focused on the interrelationship between job involvement and organizational commitment (e.g., Blau & Boal, 1987, 1989; Huselid & Day, 1991). Blau and Boal (1989) found that the interaction of job involvement and organizational commitment significantly predicted absenteeism and turnover after accounting for the main effects of each. Huselid and Day (1991), however, argued that this significant interaction resulted from the use of OLS rather than logistic regression estimation and provided supporting evidence.

Little consideration has been given to the relative antecedence of job involvement and organizational commitment. Dubinsky and Hartley (1986) did not find their hypothesized causal effect of job involvement on organizational commitment. Their reasoning was that job involvement simply would be related inversely to turnover, and organizational commitment was regarded as an inversely scaled proxy for turnover.

Job involvement is likely to be an antecedent of organizational commitment to the extent that job conditions giving rise to the individual's identification with the job are unique to the employing organization and difficult to duplicate in alternative employment opportunities. An alternative view would hold that organizational commitment would be likely to lead to job involvement if one's attitude toward the organization increased one's

psychological identification with the work being performed. We regard this as somewhat less likely because it implies that one's attitude toward the organization has the potential to make boring work seem enduringly interesting.

Previous research has observed a consistent negative relationship between job involvement and turnover intentions (e.g., Hollenbeck & Williams, 1986; Blau, 1988). This is intuitively logical, as the less involved one is in one's job, the more one tends to withdraw psychologically from the organization (Argyris, 1964; Rabinowitz & Hall, 1977; Hanisch & Hulin, 1990).

Organizational Commitment

Organizational commitment has been viewed in two distinct ways (Mathieu & Zajac, 1990). One view regards organizational commitment as attitudinal or affective in nature. Attitudinal or affective commitment is defined as the strength of one's identification with and involvement in the organization (Porter, Steers, Mowday, & Boulian, 1974; Mowday, Steers, & Porter, 1979). Another view regards organizational commitment as a calculated consideration of one's investments (or "side bets" [Becker, 1960]) in the organization over time. The two primary operational measures of organizational commitment (Mowday, Porter, & Steers, 1979 and Hrebiniak & Allutto, 1972, respectively) reflect the affective and calculative conceptualizations of commitment. Thus, assessing the moderating effects of these two commonly used measures is also likely to indicate which conceptualization of organizational commitment is more strongly related to work performance and other job attitudes.

Although previous research has indicated a strong negative relationship between organizational commitment and turnover intentions, it has been inconsistent regarding whether organizational commitment completely mediates the effects of job satisfaction on turnover intentions or whether job satisfaction is directly related to turnover intentions. The present study attempts to resolve this inconsistency using data aggregated across all available empirical research.

Turnover Intentions

Turnover intentions are defined simply as behavioral intentions to leave the organization (Jackofsky, 1984). Turnover research has suggested that they result from a process of thinking about quitting and intending to search for alternative employment (as well as from organizational commitment and job satisfaction as considered in this research) and are a good predictor of actual turnover (Mobley, Horner, & Hollingsworth, 1978; Bluedorn 1982; Jackofsky 1984).

Potential Moderator Variables

Potential moderating influences consist of two categories of variables: sample characteristics and measurement characteristics. Research involving work performance and job attitudes has been conducted in a wide variety of organizational settings, sampled a diversity of subject populations, and employed a number of different measures of varying conceptual dimensions and psychometric properties. Prior research has not investigated the extent to which these contextual factors and methodological choices made by researchers systematically influence empirical findings.

Sample Characteristics

Relatively little research has investigated the extent to which relationships involving work performance and job attitudes differ according to the type of job considered. A meta-analysis furnishes an opportunity to undertake such an assessment. The sample characteristics coded and analyzed as potential moderator variables included managerial versus non-managerial, sales versus non-sales, professional versus non-professional, nurses versus non-nurses, and private versus public sector samples.

Managerial versus Non-Managerial Samples.¹ Significantly more research on work performance and job attitudes has investigated non-managerial as compared to managerial samples. Because managerial samples are likely to differ from non-managerial ones in terms of demographic factors (e.g., education), personal characteristics (e.g., cognitive ability), and possibly in terms of attitudinal characteristics (e.g., career commitment), it is possible that these two types of samples may differ in the strength and nature of the relationships investigated in this study.

Sales versus Non-Sales Samples. A significant amount of work performance - job attitude research has been conducted in salesforce contexts. As boundary-spanning personnel, salespeople may differ from non-salespeople with respect to the interrelationships among work performance and job attitudes (Cron & Slocum, 1986).

Professional versus Non-Professional Samples.² More highly trained and educated professional samples (e.g., accountants, engineers) may differ importantly from non-professional samples. In particular, it is possible that professionals whose skills are readily transferable may draw a greater distinction between the job per se and the organization they

serve than do non-professionals. If professionals make a greater distinction between the job and the organization than do non-professionals, smaller mean correlations of organizational commitment with job satisfaction and job involvement should be observed for professionals than for non-professionals.

Nursing versus Non-Nursing Samples. A considerable volume of work performance - job attitude research has also been conducted in medical contexts using primarily samples of nurses. Nursing versus non-nursing samples were coded as a potential moderating variable to assess whether results from medical contexts generalize to other populations. Because nurses tend to be intensively socialized into their profession and to be able to switch jobs with relative ease, it is likely that they, like other professionals, will draw a greater distinction between their job and their organization than non-nursing samples. This would result in smaller correlations between attitudes toward the job (i.e., satisfaction, involvement) and organizational commitment for nursing samples than for other types of samples.

Measure Characteristics

As previously noted, each construct considered in this study has been operationalized in more than one way. Consequently, types of measures were coded and considered as possible moderator variables.

Work Performance. Work performance has been operationalized in various studies as objective measures, manager ratings, self ratings, and peer ratings. Prior research (e.g., Landy & Farr, 1983) has considered the relative merits of these various performance measures from a conceptual standpoint. Quantitatively integrating empirical results across

studies provides an opportunity to assess whether type of performance measure systematically affects the strength of performance - job attitude relationships.

Job Satisfaction. Numerous job satisfaction measures have been used in a long tradition of research. The five most frequently used measures (the Job Descriptive Index [Smith, Kendall, & Hulin, 1969], the Job Diagnostic Survey [Hackman & Oldham, 1975], the Minnesota Satisfaction Questionnaire [Weiss, et al., 1967], the Michigan facet-free job satisfaction scale [Quinn & Staines, 1979], and the Index of Organizational Reactions [Dunham, et al., 1977]) were coded for separate consideration in moderator analyses.

Job Involvement. As previously noted, the conceptual and operational definition of job involvement has been a subject of some confusion and debate in prior research. Kanungo (1982) criticized the commonly used Lodahl and Kejner (1965) scale as being conceptually ambiguous (for mixing ego involvement and psychological identification perspectives) and developed a scale based on the psychological identification perspective. The meta-analysis provides an opportunity to assess the empirical significance of the measurement issues concerning job involvement.

Organizational Commitment. The two most commonly used operational measures of organizational commitment correspond to different conceptualizations of the construct. The Mowday, Porter, and Steers (1979) and the earlier Porter, Steers, Mowday, and Boulian (1974) measures operationalized the attitudinal or affective commitment perspective. The Hrebiniak and Alutto (1972) measure represents the calculative commitment, or "side bets" perspective. Hence, moderator analyses based on the type of commitment measure are likely

to provide useful information regarding the strength of association of these different conceptualizations of organizational commitment with other constructs.

Turnover Intentions. Turnover intentions have been measured using a variety of single- and multi-item scales. Analysis of single- versus multi-item scales has been suggested for meta-analysis because multiple-item scales are expected to be more reliable and sensitive (and reliability of multi-item scales can be assessed). If, as expected, multi-item scales are more reliable, less attenuation from measurement error should result in greater effect sizes (Johnson & Eagly, 1989).

Method

Collection and Coding of Studies

Studies for inclusion in the meta-analysis were identified by searching the ABI-Inform and Psychlit computerized databases using the construct labels as key terms. In addition, issue-by-issue searches of the Journal of Applied Psychology, Academy of Management Journal, Journal of Vocational Behavior, Administrative Science Quarterly, Organizational Behavior and Human Decision Processes, Journal of Management, Journal of Marketing, Journal of Marketing Research, Journal of Organizational Behavior, Journal of the Academy of Marketing Science, Journal of Personal Selling and Sales Management, Human Relations, Personnel Psychology, Journal of Occupational Behavior, and Work and Occupations from 1970 to the present were conducted. References cited in articles relevant to the study were reviewed to identify additional studies to include.

Any study reporting one or more correlations between any two constructs considered in this study was included. As a result of this broad inclusion criterion and the extensive

search, 210 articles, yielding 391 usable correlations, were identified as relevant to the meta-analysis. The Pearson zero-order correlation coefficient r was used as the effect size metric.

After the relevant studies were identified, each was coded independently by one of the authors and a second coder. The coders agreed over 90 percent of the time, and the few disagreements were resolved by discussion between the coders.

Analysis of Pairwise Relationships

The meta-analysis of pairwise relationships was conducted according to methods described by Hunter and Schmidt (1990). The first stage of the analysis involved computing weighted mean correlations for each pairwise relationship between the constructs considered. Individual study effects were corrected for attenuation from measurement unreliability to estimate the true disattenuated correlation between latent constructs and weighted by sample size to give greater weight to more precise estimates (Hunter & Schmidt, 1990). The proportion of variance in the corrected correlations that could be accounted for by sampling error was then estimated according to formulas provided by Hunter and Schmidt (1990).

Survey of Experts

To assess the amount of consensus regarding the path structure of relationships among the constructs, a survey of expert researchers in organizational behavior was conducted. The survey of experts was also undertaken to solicit expert opinion regarding the most likely set of nomological relationships among the constructs to assist in developing path models to test using the aggregated data.

The survey was conducted by contacting organizational behavior scholars whose work has been prominent in the research reviewed in this study and asking them to draw the path-

analytic model involving the five constructs that they considered most likely to be true given their understanding of the literature. A first contact was made by telephone, followed by a letter with a self-addressed, stamped envelope and a blank sheet on which to draw the model. Of 44 scholars contacted, 24 submitted their model in response to the request.

Responses to the survey were analyzed by constructing a frequency matrix that recorded the number of times that each construct was represented as an antecedent of each other construct.³ The matrix is presented in Table 1. The upper and lower diagonals of the matrix represent opposite directions of causation for each pairwise relationship. The results show a very substantial divergence of opinion among the experts regarding the relative causal antecedence of the constructs. Every possible causal combination among the constructs was endorsed by at least one expert, suggesting that the large amount of research effort in this research stream has resulted in little consensus regarding the path structure of relationships. Moreover, no two experts produced identical models of interrelationships among the five constructs, indicating a virtual absence of consensus. Substantial consensus did exist with respect to the fact that other constructs (and especially organizational commitment) are antecedents, rather than consequences, of turnover intentions. Less consensus existed regarding the relative antecedence of other relationships.

To establish the most probable out of the multiplicity of possible models based on theory and the collective judgment of the experts, each pairwise relationship was analyzed in terms of how many times each construct was denoted as the antecedent of each other construct. The frequencies of the causal orderings represented in the top diagonal of Table 1 were subtracted from the frequencies of the orderings in the bottom diagonal. A positive

difference was considered an endorsement of the causal priority represented in the bottom diagonal of the matrix, and a negative difference was considered an endorsement of the causal priority represented in the top diagonal. This "difference matrix" is represented in Table 2. This matrix and relevant theory and empirical findings were then used to construct path models that represented the most likely set of relationships based on the collective responses of the experts.

Path Models

Schmidt (1992) has suggested that meta-analysis can be employed in theory development and testing by using aggregated study effects to test causal models. Accordingly, weighted average correlations resulting from the meta-analyses were used to explore path-analytic relationships involving work performance and job attitudes. Theory and the results of the survey of experts were used to construct three alternative path models. These models are depicted in Figure 1. The weighted mean correlations were then used as input to LISREL VII estimation programs. Because the correlations used in the analysis were corrected for measurement unreliability, paths connecting the latent constructs to their observed measures were fixed to unity.

Model 1. Model 1 represents the closest possible approximation of the experts' collective judgment (as represented by the results presented in Table 2). It represents job involvement as an antecedent of every other construct in the model. It also represents organizational commitment as an antecedent of work performance, job satisfaction, and turnover intentions. Work performance is modeled as an antecedent of job satisfaction and job satisfaction as an antecedent of turnover intentions. The one departure from the

relationships suggested by the frequency data in Table 2 is that organizational commitment is modeled as an antecedent of job satisfaction. It was not possible to represent organizational commitment simultaneously as an antecedent of work performance, work performance as an antecedent of job satisfaction, and job satisfaction as an antecedent of organizational commitment (as per the frequency data) in the context of a recursive model. All other aspects of the model are consistent with the frequency data.

Model 2. Model 2 postulates work performance as exogenous and job satisfaction, job involvement, organizational commitment, and turnover intentions as endogenous. Consistent with existing empirical evidence (e.g., Wanous, 1974; Sheridan & Slocum 1975, Bagozzi 1980), it represents work performance as the antecedent of job satisfaction. Although work performance has variously been considered an antecedent, a consequence, and both an antecedent and consequence of various job attitudes, existing evidence demonstrates that effects involving work performance are very modest in strength (e.g., Mathieu & Farr 1990). Several studies have found the effects of work performance on job attitudes to be mediated by job satisfaction (e.g., Stumpf, 1981; Brown, Cron, & Leigh, 1993). Consistent with these findings, model 2 posits that work performance is primarily an antecedent of job satisfaction and that its effects (if any) on other job attitudes will be mediated by job satisfaction.

Model 2 is consistent with Mowday, Porter, and Steers' (1982) view that job satisfaction is primarily an antecedent rather than a consequence of organizational commitment, a question on which the empirical evidence is mixed. Consistent with some empirical and meta-analytic evidence, the model also posits a direct negative effect of job

satisfaction on turnover intentions, in addition to an indirect effect that is mediated by organizational commitment (e.g., Farkas & Tetrick, 1989; Tett & Meyer, 1993; but see Bluedorn, 1982 and Williams & Hazer, 1986 for opposing views and conflicting results). The model also posits job involvement as a direct antecedent of both organizational commitment and turnover intentions. Finally, based on extensive empirical evidence, the model posits a direct negative effect of organizational commitment on turnover intentions.

Model 3. Model 3, like model 1, represents job involvement as an antecedent of all other constructs in the model (although, in this case, its relationship with turnover intentions is posited to be indirect, mediated by organizational commitment). Unlike model 1, but similar to model 2, it represents job satisfaction as an antecedent of organizational commitment. It is unique among the three models in positing that performance is primarily a consequence, rather than an antecedent, of job satisfaction. Although this runs counter to the best empirical evidence (e.g., Wanous, 1974; Sheridan & Slocum, 1975; Bagozzi, 1980), it was necessary to model the job satisfaction - work performance relationship in this manner to represent organizational commitment simultaneously as a consequence of job satisfaction and an antecedent of work performance as per the collective judgment of the experts. Like model 1, and consistent with the frequency data in Table 2, model 3 posits job involvement and organizational commitment as antecedents of work performance.

Results

Pairwise Relationships and Moderator Analyses

Table 3 presents the results of the meta-analyses of pairwise relationships, including the number of studies of each relationship, cumulative sample sizes, weighted mean observed

correlations, weighted mean correlations corrected for attenuation from measurement unreliability, and 95 percent confidence intervals around the observed and corrected mean correlations. These results indicate relatively weak relationships between work performance and job attitudes and relatively strong relationships among the various job attitudes and turnover intentions.

Artifactual sources of variance did not account for as much as 75 percent of the variance for any of the relationships studied, indicating that moderator analyses were warranted for all of them (Hunter & Schmidt, 1990). The proportion of total variance in the corrected correlations accounted for by sampling error ranged from a low of 4 percent (for satisfaction - organizational commitment) to a high of 64 percent (for performance - organizational commitment). The total variances and proportions accounted for by sampling error are reported in Table 4. It is noteworthy that the five relationships with the least total variance and the least variance after correcting for study artifacts were the five relationships involving work performance. This suggests that, despite the diversity of operationalizations of work performance, relationships between work performance and job attitudes are relatively consistent across a large number of studies.

Table 5 reports the moderating effects of sample characteristics on pairwise relationships. The most notable sample-related moderator was professional versus non-professional samples. Professional versus non-professional sample significantly moderated four pairwise relationships, including job satisfaction - job involvement, job satisfaction - organizational commitment, job involvement - organizational commitment, and organizational commitment - turnover intentions. As expected, for all four relationships the mean

correlations were stronger for non-professional than for professional samples. This may suggest that professionals (with relatively highly transferable skills) draw a greater distinction between their job and their organization than do non-professionals.

The nursing versus non-nursing sample variable significantly moderated the job satisfaction - job involvement and job satisfaction - organizational commitment relationships. For both relationships, the weighted-mean correlations were smaller for nursing samples than for non-nursing samples. Although not statistically significant, directionally similar results were also obtained for the job satisfaction - turnover intentions, job involvement - organizational commitment, job satisfaction - turnover intentions, and organizational commitment - turnover intentions relationships. Consistent with the results described above for professionals versus non-professionals, these findings suggest that nurses tend to draw a greater distinction between the job itself and the organization than do non-nurses.

Other significant moderating effects of sample characteristics involved performance - turnover intentions and organizational commitment - turnover intentions for managerial versus non-managerial samples, but both contrasts involved only one correlation from a managerial sample. Thus, considerable caution is necessary in interpreting these findings. In both relationships, the managerial sample had the higher mean correlation, tentatively suggesting that managers are more likely to find low performance and organizational commitment to be reasons for leaving the organization than non-managers.

The only other significant moderating effect of sample characteristics involved a higher mean correlation between organizational commitment and turnover intentions for salesperson samples compared to non-salesperson samples. It appears that organizational

commitment tends to be a very good predictor of turnover intentions for salespeople, significantly better than for non-salespeople. Although the reason for this is not readily apparent, it is possible that salespeople who are low in organizational commitment are less hesitant to leave the organization than are other types of employees. Their boundary role status, relative freedom of movement to search, and transferability of job skills might contribute to this result (Churchill, Ford, and Walker 1993).

Table 6 presents results of the moderator analysis by type of satisfaction measure. The most noteworthy results from this analysis indicate that the Hackman and Oldham (1975) Job Diagnostic Survey measure produced significantly stronger correlations than other measures for several relationships. The JDS measure produced significantly higher mean correlations for the job satisfaction - job involvement, job satisfaction - organizational commitment, and job satisfaction - turnover intentions relationships. Although these results should be interpreted with caution because of the small number of studies involved in the analyses, it appears clear that the Hackman and Oldham measure tends to yield systematically larger effects. The one exception to this finding involved the work performance - job satisfaction relationship, for which the Quinn and Staines (1979) measure (the Michigan facet-free job satisfaction scale) produced a significantly higher mean correlation, albeit based on only a single study.

Table 7 presents the results of moderator analyses by type of involvement measure. Studies using the Kanungo (1982) measure, reflecting the psychological identification view of involvement, had a higher average correlation between job involvement and organizational commitment than did the Lodahl and Kejner (1965) measure. Although the reason for this

finding is not immediately apparent, it is possible that the multidimensionality of at least some versions of the Lodahl and Kejner scale may have contributed to the lower average correlation (Rabinowitz & Hall, 1977). Studies using the Kanungo measure also yielded marginally higher correlations for the job satisfaction - job involvement relationship although the effect was not statistically significant.

Results of moderator analyses by type of organizational commitment measure are presented in Table 8. Similar to the results of Mathieu and Zajac (1990), these results show a systematic moderating effect, with studies using the Mowday, Porter, and Steers (1979) measure of affective commitment having significantly higher mean correlations than studies using the Hrebiniak and Alutto (1972) measure of calculative commitment. This was true for all four relationships involving organizational commitment. These results are consistent with prior research (e.g., Mathieu & Zajac, 1990; Cohen & Lowenberg, 1990) in suggesting that the affective and behavioral investments views of organizational commitment have clearly different relationships with work performance and other job attitudes, with affective commitment being significantly more strongly related to related constructs than behavioral investments commitment.

Results of moderator analyses by single- versus multi-item turnover intentions measures are reported in Table 9. These results show a significantly higher correlation between organizational commitment and turnover intentions for studies that used multi-item measures of turnover intentions. This is consistent with the expectation that multi-item scales would be more reliable and yield stronger correlations because of less attenuation from measurement error.

Table 10 presents results of moderator analyses by type of performance measure. Despite the wide variety of performance measures used, no significant moderator effects were found. It is noteworthy in this regard that pairwise relationships involving work performance had less total variability and less true variance after correction for study artifacts than other pairwise relationships.

Assessment of Path-Analytic Relationships

Model 1. The matrix of weighted mean corrected pairwise correlations was then used to estimate model 1 using LISREL VII. The sample size used in the analyses was the median sample size from the analyses of pairwise relationships ($N = 10,588$). The number of parameters estimated was large relative to the available degrees of freedom, resulting in virtually a perfect fit to the data ($\chi^2 [1 \text{ d.f.}] = .04, p = .834, \text{A.G.F.I.} = 1.0, \text{RMSR} = .000$). This excellent fit is not surprising given the fact that the model was nearly saturated and possessed only a single degree of freedom. However, inspection of the standardized path coefficients revealed several that represented weak relationships. Because of the very large sample size, statistical significance was not an adequate indicator of the substantive significance of relationships in the model. Although all paths were highly statistically significant, several appeared not to be substantively significant. The effects of job involvement on work performance (.06) and turnover intentions (-.04), for example, did not appear to be substantively important. The effect of work performance on job satisfaction (.09) also appeared to be of marginal importance.

To empirically assess the substantive significance of these paths and to assess model fit with a greater number of degrees of freedom, the model was reestimated with these weak

paths (with standardized coefficients of less than .10) trimmed from the model. These results are presented in Figure 2. This resulted in a fit to the data of chi square (4 d.f.) = 172.07, A.G.F.I. = .976, RMSR = .029. It is particularly noteworthy that deletion of the trimmed paths resulted in no change in the proportion of explained variance in work performance and job satisfaction and in a change of only .01 in turnover intentions. This strongly supports the assumption that the deleted paths were lacking in substantive significance. Yet deletion of the paths resulted in a large decrement in fit of the model, suggesting that capitalization on chance was largely responsible for the excellent fit of the full model.

An additional test was conducted to assess whether, in the context of this model, job involvement was primarily an antecedent or a consequence of organizational commitment. This was done by simply reversing the direction of the path between the two constructs. The model with job involvement as the antecedent resulted in a fit of chi square (4 d.f.) = 553.76, A.G.F.I. = .927, RMSR = .069. This dramatic decrement in model fit strongly suggests that, in the context of this model, at least, job involvement is primarily an antecedent rather than a consequence of organizational commitment.

Model 2. Estimation of model 2 resulted in a fit of chi square (3 d.f.) = 27.44, A.G.F.I. = .995, RMSR = .013, indicating a very good fit to the data. One path in the model, job involvement → turnover intentions, was very small in magnitude and appeared to be lacking in substantive significance. Thus, it was trimmed from the model. Reestimation of the model without this path resulted in a fit of chi square (4 d.f.) = 43.77, A.G.F.I. = .994, RMSR = .015. Deletion of the job involvement → turnover intentions path resulted in

a reduction of only .01 in explained variance in turnover intentions, suggesting that the path lacked substantive significance.

Additional tests were again conducted to address study questions more directly. To evaluate whether job satisfaction is primarily an antecedent or a consequence of organizational commitment, a test described by Bagozzi (1980) was employed. The test involved estimating a model identical to that represented in Figure 3 with the exception that a reciprocal causal path was added from organizational commitment to job satisfaction. Estimation of the model resulted in the following reciprocal path coefficients and standard errors between job satisfaction and organizational commitment:

<u>Path</u>	<u>Standardized Coefficient</u>	<u>Standard Error</u>	<u>t-Value</u>
J.S. → O.C.	.33	.011	31.35
O.C. → J.S.	-.30	.102	-2.94

The job satisfaction → organizational commitment path was in the predicted positive direction and had a small standard error and large t-value, whereas the reciprocal organizational commitment → job satisfaction path was opposite in sign to the prediction and had an inflated standard error. This suggests that job satisfaction is primarily an antecedent rather than a consequence of organizational commitment.

A similar test was planned to assess the antecedence of job involvement with respect to organizational commitment, but the model including reciprocal paths between the two constructs did not meet model identification requirements. Reversing the causal arrow linking the two constructs resulted in a model fit identical to that of the hypothesized model and a parameter estimate for the organizational commitment → job involvement path similar

in magnitude to the job involvement → organizational commitment path reported in Figure 2. Thus, results from model 2 regarding the relative antecedence of this relationship are not as revealing as those from model 1.

Model 3. Estimation of model 3 resulted in a fit to the data of chi square (1 d.f.) = 16.27, A.G.F.I. = .991, RMSR = .007, again suggesting a good fit to the data. Three model paths (job involvement → work performance, organizational commitment → work performance, and work performance → turnover intentions) were weak and appeared to lack substantive significance. These paths were trimmed and the model reestimated. Results of this analysis are presented in Figure 4. Trimming the weak paths resulted in no change in the proportion of variance explained in any of the endogenous constructs, indicating that they lacked substantive significance. Estimation of the trimmed model resulted in a fit to the data of chi square (4 d.f.) = 43.77, A.G.F.I. = .994, RMSR = .015. These indices are identical to those of model 2. As the identical fit indices suggest, the trimmed versions of models 2 and 3 incorporate very similar relationships. They differ in the way they represent the directionality of the job involvement → job satisfaction and job satisfaction → work performance relationships. However, reversing the directionality of either of these relationships in the context of model 3 had no effect on either model fit or standardized path coefficients. The convergence of models 2 and 3 when weak paths were trimmed suggests that these models parsimoniously and rather accurately represent the aggregated data. Although the analysis provides no empirical basis on which to choose between the highly similar models 2 and 3, both appear to provide better representations of the data than model 1.

The relative antecedence of two relationships (work performance - job satisfaction and job involvement - organizational commitment) could not be conclusively established by comparing models 2 and 3, but the agreement of the two models in all other respects suggests a stable pattern of relationships. Although fit indices of the two models did not indicate the relative antecedence of work performance and job satisfaction, previous empirical work has consistently supported work performance as the antecedent. The experts surveyed also strongly endorsed the antecedence of work performance. Thus, there is some basis to prefer model 2's representation of work performance as the antecedent over model 3's representation of job satisfaction as the antecedent.

The other difference between models 2 and 3 is their representation of the job satisfaction - job involvement relationship. Model 2 represents satisfaction as the antecedent, whereas model 3 represents involvement as the antecedent. Prior research does not provide a strong basis to choose between the models, although job satisfaction has most commonly been represented as the antecedent (Hall 1976; Stumpf, 1981; Brown, Cron, & Leigh, 1993). However, the experts surveyed endorsed job involvement as the antecedent 9 times, compared to 7 times for job satisfaction. Thus, there appears to be little prior basis to reach a conclusion regarding relative antecedence of these constructs and analysis based on the aggregated study effects was inconclusive.

Although little basis exists to choose between models 2 and 3 exists with respect to their representation of the job satisfaction - job involvement relationship, there is some basis to prefer model 2's representation of work performance as an antecedent of job satisfaction. Thus, all else being equal, model 2 appears to provide a representation of relationships that

is somewhat more consistent with established knowledge (Wanous, 1974; Sheridan & Slocum, 1975; Bagozzi, 1980). In all other respects (except for the job satisfaction - job involvement relationship), the two models provide identical representations of relationships.

Discussion and Conclusions

The findings of the expert survey indicate very little consensus regarding the path structure of relationships involving work performance and job attitudes. Despite the fact that several hundred studies have been reported in the literature, no two path models submitted by the expert researchers sampled were identical. Moreover, every possible relationship among the five constructs was incorporated into at least one expert's response. This appears to represent a state of great uncertainty regarding the nomological network of relationships among these constructs. This study has provided important evidence regarding the structure of path relationships as well as about the strength and consistency of pairwise relationships and systematic moderating effects of sample and measure characteristics.

Several findings are very consistent across the alternative models. The models are consistent in finding substantial direct negative effects of both job satisfaction and organizational commitment on turnover intentions. Of these, the effect of job satisfaction is the stronger. Models 2 and 3 were also consistent in representing organizational commitment as a consequence rather than an antecedent of job satisfaction. The reciprocal paths test conducted in the context of model 2 provided supporting evidence for the antecedence of job satisfaction with respect to organizational commitment. Evidence from empirical studies had been divided on this issue, with Bateman and Strasser (1984) and Farkas and Tetrick (1989) concluding that organizational commitment was the antecedent and Williams and Hazer

(1989) and Meyer and Allen (1989) concluding that job satisfaction was the antecedent. Path analysis based on the aggregated study effects supports the latter position.

Previous empirical research had also been divided on the issue of whether job satisfaction exerted a direct causal effect on turnover intentions or whether its effect on turnover intentions was indirect and mediated by organizational commitment. The robust finding of a strong direct negative effect of job satisfaction on turnover intentions in this study is consistent with similar findings obtained by Tett and Meyer (1993). In addition to this direct effect, the findings (i.e., models 2 and 3) also suggested an indirect effect that was mediated by organizational commitment.

Through its direct and indirect effects on behavioral intentions, job satisfaction appears to "drive" the turnover process. The combined direct and indirect effects of job satisfaction accounted for over 30 percent of the variance in turnover intentions, compared to less than 9 percent for the direct effect of organizational commitment. Thus, it appears that job satisfaction is the crucial variable in the turnover process, even though other constructs more proximal to turnover intentions mediate some of its effects.

The models were consistent in finding work performance very modestly related to job satisfaction and virtually not at all to other job attitude constructs. In the context of model 1, which considered organizational commitment as a common antecedent of both work performance and job satisfaction, the direct relationship between work performance and job satisfaction was not substantively significant. This finding is consistent with prior research suggesting that the relationship between work performance and job satisfaction may be spurious and attributable to the relationship of both constructs with common antecedents

(e.g., Behrmann & Perreault, 1984; Brown & Peterson, 1993, 1994). It was not possible to evaluate this question in the context of models 2 and 3 because they did not include common antecedent influences on work performance and job satisfaction. The results were inconclusive with respect to the relative antecedence of work performance and job satisfaction, as models 2 and 3, incorporating opposite directions of causation, resulted in identical fit indices. Even so, the representation of work performance as the antecedent in model 2 appeared preferable because of its consistency with prior empirical findings and judgments of experts in the field. It is apparent from the results of the meta-analysis, however, that work performance is very weakly related to job attitudes.

The finding that across a large number of studies work performance is, at best, only slightly related to job satisfaction and other job attitudes has significant practical implications for the workplace. Although job satisfaction and organizational commitment are strongly and negatively related to the turnover process, work performance is only marginally related to these job attitudes. This suggests that superior performance, in and of itself, does very little to make high performers less likely than low performers to leave the organization. Thus, proactive managerial actions (e.g., contingent rewarding of successfully achieved objectives) may serve to enhance particularly the job attitudes of high performers and assure a degree of turnover functionality (Hollenbeck & Williams, 1986).

The finding of a very weak relationship between job involvement and turnover intentions suggests that high levels of job involvement, in and of themselves, do little to reduce the likelihood of turnover. This suggests that enhancing job involvement through job redesign (e.g., Hackman & Oldham, 1980) or enrichment (Hertzberg, 1987) is likely to have

very limited effects in terms of reducing turnover. For reducing turnover, actions that enhance job satisfaction and organizational commitment (especially affective commitment) appear to be more effective.

Some suggestive evidence of the antecedence of job involvement with respect to organizational commitment was provided, although the evidence is not conclusive. The model 1 results clearly suggested job involvement as the antecedent in the context of that model, but the fit of models 2 and 3 was the same regardless of the ordering of these constructs.

The results clearly suggest that job satisfaction is primarily an antecedent, rather than a consequence, of organizational commitment. Evidence from empirical studies is divided on this issue, with Bateman and Strasser (1984) and Farkas and Tetrick (1989) concluding that organizational commitment was the antecedent and Williams and Hazer (1989) and Meyer and Allen (1989) concluding that job satisfaction was the antecedent. Path analysis based on the aggregated study effects supports the latter position.

Several sample and measure characteristics were found to have significant moderating effects on pairwise correlations. Like Mathieu and Zajac (1990), we found that organizational commitment relationships with other job attitudes were stronger for affective or attitudinal commitment (i.e., Mowday, Porter, & Steers, 1979) than for calculative commitment (i.e., Hrebiniak & Alutto, 1972). Meyer and Allen (1984) and Mathieu and Zajac (1990, p. 186) have suggested that the generally lower correlations for calculative commitment may result from deficiencies in the Hrebiniak and Alutto scale, such as multidimensionality (with factors correlated in opposite directions with respect to other

variables). It also appears that behavioral investments in the organization are simply not as effective as attitudinal factors in securing the commitment of individuals to organizations. The results of this study, as well as those of Mathieu and Zajac, suggest that the ties that bind employees to organizations are primarily affective.

Relationships involving job satisfaction were also found to be significantly stronger in studies that used Hackman and Oldham's (1975) Job Diagnostic Survey instrument than in those that used the JDI (Smith, Kendall, & Hulin, 1969) or Quinn and Staines (1979) measures. The job involvement - organizational commitment relationship was also significantly stronger for studies that used the Kanungo (1982) job involvement measure than for those that used the Lodahl and Kejner (1965) measure. Although the reasons for these findings are not immediately clear, they could be the result of Kanungo's clearer and more focused definition of involvement, the factorial complexity of the Lodahl and Kejner scale, or some other unidentified reason. This finding may be useful in designing or interpreting related research.

Moderator analyses also indicated significantly higher correlations between job attitudes for nonprofessional than for professional samples. Three relationships, job satisfaction - job involvement, job involvement - organizational commitment, and organizational commitment - turnover intentions, were significantly moderated by whether professionals or non-professionals were studied. It is possible that professionals, having more highly developed and transferable job skills, tend to draw a greater distinction between the job per se and the organization than do non-professionals.

Very similar findings resulted from analyses comparing samples of nurses to non-nurse samples. Three relationships, job satisfaction - job involvement, job satisfaction - organizational commitment, and organizational commitment - turnover intentions, were significantly moderated by whether nursing or non-nursing samples were studied. As in the case of professionals versus non-professionals, relationships between specifically job attitudes and organizational commitment tended to be weaker for studies using nursing samples than for those using non-nursing samples. For nurses then, as for other professionals, it appears likely that a greater distinction is drawn between the job per se and the organization than for non-nurses. Nurses tend to undergo a fairly intensive process of socialization into their profession, giving them a strong sense of work role, and enjoy relative job mobility, both of which would contribute to a distinction being made between job and organizational attitudes. For both professional versus non-professional and nursing versus non-nursing samples, the results tend to support Gouldner's (1957, 1958) notions regarding specialized experts ("cosmopolitans") being more externally focused and less likely to be identified as "company personnel" than employees who lack such specialized expertise ("locals").

Across a great variety of study contexts and construct operationalizations, there was little "true" variance in relationships between work performance and job attitudes. Although the results were negligible in strength, they were relatively consistent across studies. The finding of very modest but relatively consistent relationships between work performance and job attitudes is consistent with previous integrative studies (e.g., Vroom, 1964; Iaffaldano & Muchinsky, 1985; Brown & Peterson, 1993) and again suggests that performance has little effect on job attitudes or vice versa.

Partitioning the available study effects by coded sample characteristics revealed that few studies of relationships involving work performance and job attitudes have been conducted with samples of managers. Much more is known about these relationships for samples of "rank and file" employees than among managers. It would be worthwhile for future research to consider ways in which these relationships might differ between managers and nonmanagers and to consider how job attitudes affect decision-making processes of managers.

The present study was not able to conclusively establish the causal priority of job involvement with respect to organizational commitment. The relationship between these two constructs has been the subject of considerable debate, and existing data are inconclusive regarding their interrelationship and how they individually and jointly affect other constructs such as turnover (Blau & Boal, 1987; Huselid & Day, 1991). Hence, future research aimed at clarifying these relationships is clearly warranted.

Several caveats should be noted. Although models 2 and 3 were rather consistent with the aggregated data, caution is warranted in drawing inferences regarding causality. The data were drawn primarily from cross-sectional studies, and all studies were correlational field investigations rather than controlled laboratory experiments. Causality can only be conclusively inferred through controlled experimentation. Additional longitudinal research may also provide useful suggestive evidence regarding the relative causal priority of these constructs (although previous longitudinal studies have produced conflicting results).

Moderator variable analyses were conducted on relatively small numbers of studies, limiting power to reject the null hypothesis. Hence, caution in interpreting these results is

warranted. The statistical tests used in these analyses, however, make no assumptions that are not likely to hold with small sample sizes (Rosenthal, 1984, p. 118). Thus, limited power to detect significant differences is the only potential problem. Despite this potential problem, several significant moderating effects were found.

The study used meta-analysis not only to summarize the strength and consistency of pairwise relationships, but also to draw summary conclusions regarding nomological relationships from the very large and diverse literature investigating work performance and job attitudes. It addressed several important topics of debate in the literature and provided important clarifications regarding nomological relationships based on a large-scale aggregation of data. These aggregated data suggest that work performance is modestly related to job satisfaction but not to other job attitudes; that job satisfaction is primarily an antecedent rather than a consequence of job involvement and organizational commitment; that job satisfaction has a strong direct effect on turnover intentions, as well as an indirect effect that is mediated by organizational commitment; and that job involvement has only a very modest effect on turnover intentions after the effects of common antecedents (e.g., job satisfaction) are controlled. A number of systematic moderating effects of sample and measure characteristics were also identified. Despite the large volume of existing empirical data regarding the relationships studied here, it appears clear that further theoretical and empirical work aimed at clarifying the nature of nomological relationships (especially regarding job involvement) is warranted.

Footnotes

1. Studies were only coded as managerial versus non-managerial and professional versus non-professional when it was clear from the sample description that the sample was homogeneously classifiable according to levels of the moderators. For example, nursing samples were not coded according to the professional/non-professional moderator because in most nursing samples it appeared likely that certified professionals might be mixed with non-professional personnel (e.g., RPNs with LPNs and orderlies). Likewise, samples that mixed managers with technical personnel were not coded as either managerial or professional because they were not homogeneously one or the other.

2. For purposes of this study, professionals were defined as individuals with specialized technical training (e.g., accountants, engineers). Nurses were considered separately because of the large number of nursing samples reported in the literature. The coding classification of professionals did not overlap with that of managers because the two were treated as mutually exclusive (i.e., managers were not included in the professional category).

3. Many of the path models submitted by the experts were non-recursive and incorporated reciprocal causation. Generally, it was not possible to model these (see the discussion regarding the job satisfaction - organizational commitment relationship in the context of model 2 for an exception). Thus, for a relationship denoted as reciprocal on an expert response, an entry was noted in each diagonal of the matrix.

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Table 1

Frequency with Which Each Construct Was Represented as Antecedent in Pairwise Relationships

	WP	JS	JI	OC	TI
WP		3	10	9	1
JS	12		9	8	3
JI	5	7		4	2
OC	5	9	8		3
TI	4	12	11	18	

Note: Entries in top diagonal represent the frequency with which the row variable was denoted as the antecedent. Entries in the bottom diagonal represent the frequency with the column variable was denoted as the antecedent.

Table 2

Difference Matrix Showing Which Direction of Causality was Specified More Frequently by Experts

	WP	JS	JI	OC	TI
WP					
JS	+9				
JI	-4	-2			
OC	-3	+1	+4		
TI	+2	+7	+8	+13	

Note: Positive entries indicate experts' endorsement of the column variable as the antecedent. Negative entries indicate endorsement of the row variable as the antecedent.

Table 3

Analysis of Pairwise Relationships

Relationship	Number of Study Effects	Cumulative N	Observed \bar{r}	Corrected \bar{r}	95% Confidence Interval (Observed)	95% Confidence Interval (Corrected)
Performance - Satisfaction						
Performance - Satisfaction	98	26,355	.14	.17	.00<p<.28	-.04<p<.38
Performance - Involvement	15	4,449	.06	.11	-.05<p<.17	-.06<p<.28
Performance - Org. Comm.	28	5,233	.11	.13	-.04<p<.36	-.05<p<.31
Performance - Turnover Intent.	22	6,407	-.09	-.11	-.24<p<.06	-.29<p<.07
Satisfaction - Involvement	38	12,434	.32	.39	.03<p<.61	.05<p<.73
Satisfaction - Org. Comm.	65	18,793	.51	.60	.17<p<.85	.21<p<.99
Satisfaction - Turnover Intent.	41	13,696	-.48	-.58	-.74<p<-.22	-.88<p<-.24
Involvement - Org. Comm.	37	13,964	.41	.50	.11<p<.71	.16<p<.84
Involvement - Turnover Intent.	14	4,050	-.29	-.33	-.49<p<-.09	-.55<p<-.11
Org Comm. - Turnover Intent.	33	10,588	-.44	-.53	-.75<p<-.13	-.89<p<-.17

Table 4

Total Variance and Proportion of Total Variance Accepted for by Sampling Error

<u>Relationship</u>	<u>Total</u>	<u>Proportion of Total</u>
Performance - Satisfaction	.011	.32
Performance - Involvement	.007	.57
Performance - Commitment	.008	.64
Performance - Turnover Intent	.008	.40
Satisfaction - Involvement	.029	.08
Satisfaction - Commitment	.037	.04
Satisfaction - Turnover Intent	.025	.06
Involvement - Commitment	.029	.05
Involvement - Turnover Intent	.012	.23
Commitment - Turnover Intent	.032	.05

Table 5

Moderating Effects of Sample Characteristics

Relationship	Managerial		Sales		Nurses		Professional	
	vs.	Non-Managerial	vs.	Non-Sales	vs.	Non-Nurses	vs.	Non-Professional
Performance - Satisfaction	.18 15 4,691	.16 43 11,393	.15 26 6,139	.16 40 11,624	.13 3 313	.15 65 18,112	.18 5 3,106	.15 48 10,601
Performance - Involvement	.07 4 873	.11 4 625	.09 3 473	.11 6 1,279	--	.10 11 2,414	.11 3 513	.07 3 377
Performance - Commitment	.18 2 355	.10 7 1,718	.11 7 1,524	.13 6 1,282	.09 3 889	.13 12 2,579	.11 3 311	.08 4 1,217
Performance - Turnover Intentions	-.31 1 114	-.13*** 11 4,607	-.18 5 810	-.12 10 4,592	-.09 4 731	-.13 12 5,099	-.12 3 3,240	-.14 7 1,288
Satisfaction - Involvement	.41 4 489	.34 11 3,031	.31 3 786	.38 19 4,769	.19 2 1,241	.43*** 23 5,194	.21 6 1,024	.44*** 6 1,001
Satisfaction - Commitment	.50 2 481	.53 12 3,209	-.62 8 1,461	.52 22 5,934	.39 7 2,094	.60*** 27 6,647	.53 10 1,857	.64* 5 842
Satisfaction - Turnover Intentions	--	-.37 10 2,744	-.43 8 1,269	-.46 10 3,294	-.36 4 1,598	-.50 14 2,965	-.52 2 303	-.54 5 1,059
Involvement - Commitment	-.41 1 241	.44 8 2,689	.48 4 1,027	.44 11 3,706	.34 2 1,230	.50 16 4,383	.26 5 838	.57** 4 802
Involvement - Turnover Intentions	--	-.27 3 1,325	-.46 1 112	-.31 4 1,867	-.24 1 1,148	-.38 5 1,276	-.26 2 153	-.46 1 112
Commitment - Turnover Intentions	-.94 1 595	-.70*** 7 1,105	-.84 2 232	-.44*** 27 9,129	-.41 8 1,346	-.51 23 8,812	-.40 11 6,060	-.69*** 3 547

* indicate $p < .05$ *** indicate $p < .001$ ** indicate $p < .01$

Table 6

Moderating Effects of Satisfaction Measures

Relationship	JDI	Hackman/ Oldham	MSQ	Quinn Staines	IOR
Performance - Satisfaction	.11 17 3,921	.11 9 1,652	.11 9 1,613	.31 ¹ 1 261	.09 2 559
Satisfaction - Involvement	.34 7 1,539	.49 ² 4 529	.39 4 1,276	.31 2 221	.58 1 445
Satisfaction - Org Commitment	.55 9 2,206	.71 ³ 6 827	.47 5 1,502	.69 1 261	.68 3 1,025
Satisfaction - Turnover Intentions	-.38 7 995	-.61 ⁴ 2 548	-.53 2 410	--	--

Entries indicate weighted mean correlations by subgroup, number of studies, and cumulative sample size.

1 Differs from mean correlation for other measures at $p < .01$.

2 Differs from JDI at $p < .01$ and from Quinn & Staines at $p < .05$.

3 Differs from JDI and MSQ at $p < .01$.

4 Differs from JDI at $p < .01$.

Table 7
Moderating Effects of Job Involvement Measures

Relationship	Lodahl & Kejner	Kanungo
Performance - Involvement	.13 9 2,306	.08 1 112
Satisfaction - Involvement	.40 19 5,421	.46 8 3,421
Involvement - Commitment	.44 11 3,957	.51 ¹ 5 928
Involvement - Turnover Intentions	-.34 7 2,970	-.46 1 112

Entries indicate weighted mean correlations by subgroup, number of studies, and cumulative sample size.

¹ Differs significantly at $p < .01$.

Table 8
Moderating Effects of Organizational Commitment Measures

Relationship	Mowday, Steers, & Porter	Alutto & Hrebeniak
Performance - Commitment	.13 ¹ 10 2,114	.00 2 337
Satisfaction - Commitment	.57 ¹ 23 9,681	.31 4 499
Involvement - Commitment	.50 ¹ 14 5,210	.16 3 402
Involvement - Turnover Intentions	-.55 ¹ 28 9,003	-.19 1 1,105

Entries indicate weighted mean correlations by subgroup, number of studies, and cumulative sample size.

¹ Differs significantly from Alutto and Hrebiniah at $p < .01$.

Table 9
Moderating Effects of Turnover Intentions Measures

Relationship	Single-Item	Multi-Item
Performance - Turnover Intentions	-.11 3 862	-.11 11 4,925
Satisfaction - Turnover Intentions	-.44 6 2,382	-.47 12 2,181
Involvement - Turnover Intentions	-.26 2 1,213	-.40 6 1,869
Commitment Turnover Intentions	-.49 11 3,177	-.57 ¹ 15 3,984

Entries indicate weighted mean correlations by subgroup, number of studies, and cumulative sample size.

¹ Differs significantly from single-item at $p < .01$.

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